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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/975,925	10/12/2001	Toshiaki Shimada	SIW-015	9233
959	7590	04/19/2004	EXAMINER	
LAHIVE & COCKFIELD, LLP.			CREPEAU, JONATHAN	
28 STATE STREET				
BOSTON, MA 02109			ART UNIT	PAPER NUMBER

1746

DATE MAILED: 04/19/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/975,925

Applicant(s)

SHIMADA ET AL.

Examiner

Jonathan S. Crepeau

Art Unit

1746

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 12 October 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 10/12/01.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1, 5, 6, and 8 are rejected under 35 U.S.C. 102(b) as being anticipated by Kuranaka et al (U.S. Patent 5,962,155). Regarding claims 1 and 5, the reference is directed to a fuel cell system comprising a hydrogen supply device (see abstract). The system comprises a hydrogen storage vessel (2) containing a hydrogen storage alloy therein (see Fig. 5; col. 5, line 15). A hydrogen supply unit (i.e., piping) supplies hydrogen to the fuel cell (1) (see Fig. 5). The system comprises two fans (5, 15) that each direct air towards the fuel cell and subsequently to the hydrogen storage vessel to warm the vessel (see Fig. 5). The housing (6) thus functions as a mixing device, which serves to mix the air supplied by the fans. The air streams generated by the fans are capable of having different temperatures when mixed. As such, this limitation is considered to be anticipated by the reference. Regarding claim 6, at least one of the air streams is reacted in the fuel cell and produces an exhaust stream. Regarding claim 8, the air stream provided by fan 16 is a coolant stream, and the stream provided by fan 5 is capable of cooling this coolant stream.

Thus, the instant claims are anticipated.

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 3, 4, and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kuranaka et al in view of Tsutsumi et al (U.S. Patent 5,366,820).

Kuranaka et al. is applied to claims 1, 5, 6, and 8 for the reasons set forth above.

However, the reference does not expressly teach that the system comprises a further hydrogen storage tank that is connected to the occlusion tank, as recited in claims 3 and 4. Further, the reference does not expressly teach the presence of a compressor, as recited in claim 7.

Tsutsumi et al. is also directed to a fuel cell system. In Figures 5 and 6 and in column 8, line 57 et seq., the reference teaches a hydrogen supply system comprising a main tank (2) and a subtank (5) which are interconnected to each other and to the fuel cell and which operate at different pressures. Further, the reference teaches an oxidant supply device (e.g., compressor) (25) that delivers oxidant to the fuel cell (see Fig. 7).

Therefore, the invention as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made because the artisan would be motivated to incorporate a second tank into the system of Kuranaka et al. In column 8, line 13, Tsutsumi et al. teaches that "[t]here is no need for desorbing the hydrogen gas outside and the pressure of the whole system cannot exceed a specified level. As a result, safety, the power generating efficiency and

the cost performance are all improved.” As such, artisan would be motivated to incorporate a second tank into the system of Kuranaka et al. Further, the artisan would be motivated to use a compressor in the system of Kuranaka et al. because it is known that increased reactant pressures are beneficial to fuel cell efficiency. Accordingly, the artisan would also be motivated to incorporate a compressor into the system of Kuranaka et al.

5. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kuranaka et al.

Kuranaka et al. is applied to claims 1, 5, 6, and 8 for the reasons set forth above.

However, the reference does not expressly teach that a flow control unit controls the two fans in accordance with a temperature required by the hydrogen occluding alloy.

However, the invention as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made because the artisan would be motivated to include such a control unit in the system of Kuranaka et al. If the temperature of the hydrogen storage vessel (2) of Kuranaka et al. were too low to release hydrogen to the fuel cell, it would be obvious to adjust the speed of the fans so as to adjust the amount of heated air passing over the vessel. The use of control means to perform this function would also be obvious. Generally, the automation of a manual activity is not considered to patentably distinguish over a reference (MPEP §2144.04(III)).

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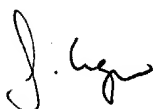
*Conclusion*

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jonathan Crepeau whose telephone number is (571) 272-1299.

The examiner can normally be reached Monday-Friday from 9:30 AM - 6:00 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Randy Gulakowski, can be reached at (571) 272-1302. The phone number for the organization where this application or proceeding is assigned is (571) 272-1700. Documents may be faxed to the central fax server at (703) 872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Jonathan Crepeau  
Patent Examiner  
Art Unit 1746  
April 14, 2004